

Usborne Fact Cards



Dinosaurs




Hundreds of amazing facts

Usborne Fact Cards

Dinosaurs

How was *T. rex* like a chicken?
Why did *Diplodocus* never chew its food?
When did *Stegosaurus* use its spiky tail?
Open the box to find out!

Giganotosaurus




Spines on head and neck

Massive head

Three-fingered hands

Walked upright on two long legs

- **Southern giant.** *Giganotosaurus* was a huge, South American meat-eater, slightly larger than the North American *T. rex*. Its name means 'giant southern lizard'.
- **Shark-toothed killer.** It belonged to a group called the *carcharodontosaurs*, whose jagged, flesh-ripping teeth reminded experts of *Carcharodon* - another name for the great white shark.
- **Scenting prey.** Its brain was only about half the size of *T. rex*'s, so it was less intelligent, but its super sense of smell led it straight to its victims.
- **Big game hunters.** The largest predators may have ganged up to hunt the largest prey. *Giganotosaurus* probably hunted in packs to bring down the enormous sauropod *Argentinosaurus*.



Preserved: Jig-4-8012-4-0006-11

Found in: Argentina

Found by: Robert Corbelli, 1993

Scientific name:

Age: 70-74 million years ago, Late Cretaceous Period

Length: 12.5m (41ft)

Hip height: 4.6m (15ft)

Weight: 6.5 tonnes (21 tons)

Prey: *Argentinosaurus*

CE

£5.99 (inc. VAT)

www.usborne.com

J MAMJJASOND/14 02402/4

ISBN 978-1-4095-0921-9



9 781409 509219 >

Amphicoelias

Amphicoelias might
just have been the
largest dinosaur ever.

Whip-
like tail



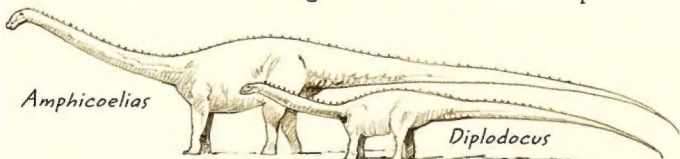
- **Monster mystery.** In 1878, fossil expert Edward Cope found part of a 2.7m (9ft) high vertebra (spine bone) in Colorado, USA. It belonged to a truly vast sauropod. He named the dinosaur, after its delicate bone, *Amphicoelias fragillimus*, meaning 'hollow on both sides and very fragile'.

- **Vanishing act.** This tantalizing giant bone, the last trace of *Amphicoelias*, was as brittle as Cope's name for it suggested: by 1921 it was lost, most likely having crumbled into dust.

Amphicoelias' complete vertebra would have towered over its discoverer.



- **Biggest of the big.** If estimates of *Amphicoelias* are correct, its tail alone was as long as its relative *Diplodocus*. Overall, it was nearly twice as long as a blue whale, and weighed as much as 20 elephants.



Pronounced: AM-fis-SEAL-ee-us

Length: 58m (190ft)

Fossils: USA

Hip height: 8.5m (28ft)

Found by: Edward D. Cope, 1878

Weight: 122.4 tonnes (135 tons)

Predators: unknown

Food: conifers, ferns

Period: 156–146 million years ago, Late Jurassic Period

Amargasaurus

Twin spiny sails along
the neck and back

Spines up to
1.2m (4ft)



Shorter neck
than most
sauropods

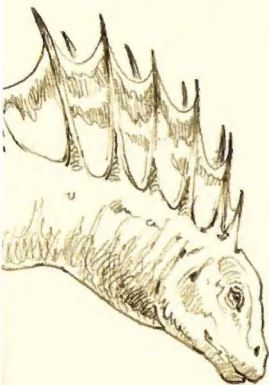
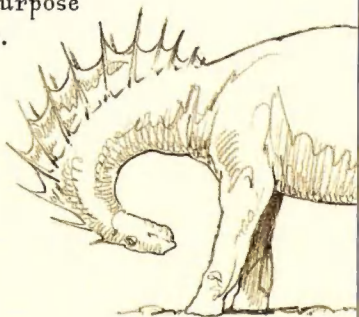
Long,
whip-
like tail

Like all sauropods,
Amargasaurus was a
herbivore (plant-eater).



- **Spiny Southerner.** *Amargasaurus* was a small South American relative of *Diplodocus*. Since its discovery in the 1980s, experts have been arguing about the purpose of its unusual spiny sails.

- **Self-protection.** The spines in its sail were sharp, so it's possible that *Amargasaurus* used them to fend off attackers.



- **Keeping cool.** The sails' large surface may have acted like an elephant's ears, helping this dinosaur to lose excess heat.
- **Showing off.** The sails are likely to have been for display. Males' sails may have been covered with bright patterns to attract females.

Pronounced: am-ARG-a-SORE-us

Length: 12m (39ft)

Fossils: Argentina

Hip height: 2.8m (9¹/₄ft)

Found by: Guillermo Rougier, 1984

Weight: 1.8 tonnes (2 tons)

Predators: unknown

Food: conifers, cycad plants

Lived: 130–120 million years ago, Early Cretaceous Period

Allosaurus

Horn-like bumps

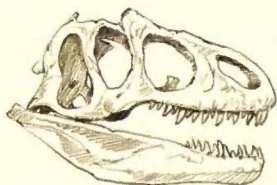
Strong,
S-shaped
neck

Hefty
tail

Three-
clawed
hands



- **King-sized killer.** Known as the King of the Jurassic, *Allosaurus* was the largest carnivore in North America in the Jurassic Period.
- **Big Al.** In 1991, a near-complete *Allosaurus* skeleton was discovered in Wyoming, USA. This huge find was nicknamed 'Big Al' but even at 8m (26ft) long, it was just a teenager.

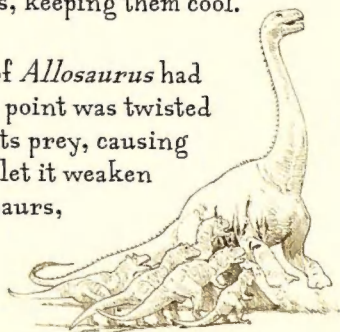


Allosaurus skull

- **Skull holes.** *Allosaurus* was a carnosaur ('meat-eating lizard'), one of a group of large, active predators with gappy skulls that let air circulate in their heads, keeping them cool.

- **Messy eater.** The teeth of *Allosaurus* had finely jagged edges: each point was twisted so that they ripped into its prey, causing massive blood loss. This let it weaken and kill even huge dinosaurs, such as *Diplodocus*.

Allosaurus may have hunted *Diplodocus* in packs.



Pronounced: AL-uh-SORE-us

Length: 10m (33ft)

Fossils: USA, Portugal

Hip height: 2.4m (8ft)

Found by: Marshall P. Felch, 1883

Weight: 1 tonne (1.1 tons)

Predators: none

Prey: *Apatosaurus*, *Stegosaurus*

Lived: 155–145 million years ago, Late Jurassic Period

Archelon

This enormous sea turtle lived at the same time as the dinosaurs.

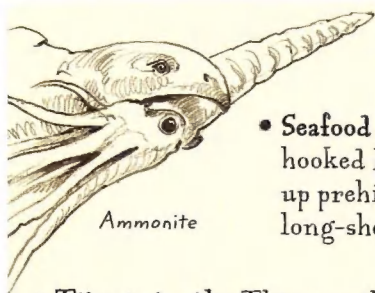
Thick, rubbery shell



Paddle-shaped flippers over 5m (16½ ft) tip to tip

Hooked, overhanging snout

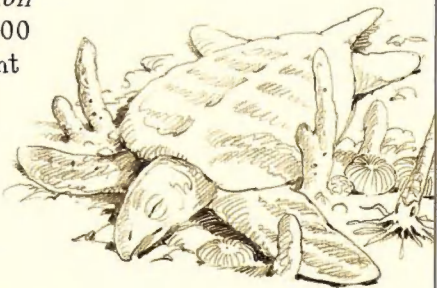




Ammonite

- **Seafood diet.** With its strong, hooked beak, *Archelon* crunched up prehistoric shellfish, such as long-shelled ammonites.

- **Titanic turtle.** This was the largest sea turtle that ever lived, with a shell the size of a small car.
- **American sea.** *Archelon* swam in the Western Interior Seaway, a shallow inland sea that, 75 million years ago, split North America in two.
- **Sea dreams.** *Archelon* may have lived to 100 years of age. It spent long stretches of this time sleeping on the seabed, occasionally waking up to surface for air.



Pronounced: ARK-uh-lon

Length: 4.6m (15ft)

Fossils: North America

Shell height: 1.6m (5¹/₄ft)

Found by: George Wieland, 1895

Weight: 2.2 tonnes (2.4 tons)

Predators: mosasaurs, sharks

Prey: ammonites, belemnites

Lived: 84–71 million years ago, Late Cretaceous Period

Baryonyx

It may have had a short,
spiny fin along its back.

Straight
neck

Walked
on two
legs

30cm (1ft)
thumb claws

Long,
crocodile-
like jaws



- **Fishy diet.** This is the only dinosaur that scientists know for certain ate fish. A skeleton found in England had a fossilized fish in its stomach, complete with scales and bones.
- **Toothy carnivore.** *Baryonyx* had 96 teeth: half as many again as most other meat-eating dinosaurs.



- **Heavy claws.** The word *Baryonyx* is Greek for 'heavy claw'. The dinosaur would crouch in wait on riverbanks, then lunge forward to spear unwary fish with its sharp, hook-like claws.

- **Crocodile smile.** Its thin, pointed teeth were firmly rooted and perfect for gripping struggling fish. The wavy shape of its jaws also helped to keep its slippery prey from escaping.



Baryonyx grappling with a fish called *Lepidotes*

Pronounced: barry-ON-ix

Length: 9m (30ft)

Fossils: England, Spain, N. Africa

Hip height: 2.5m (8 $\frac{1}{4}$ ft)

Found by: William Walker, 1983

Weight: 1.7 tonnes (1.9 tons)

Predators: none

Prey: fish, dinosaurs

Lived: 130–127 million years ago, Early Cretaceous Period

Brachylophosaurus

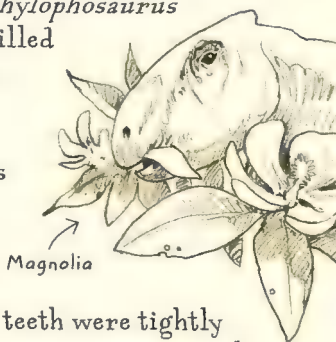
Skin covered
with pebbly
scales

Bulky
body

Short crest



- **Duck-billed grazers.** *Brachylophosaurus* was a hadrosaur (a duck-billed dinosaur). These were the cattle of the Cretaceous Period. They roamed in herds, nipping tough leaves from plants and trees with their sharp beaks.



- **Tooth-grinding.** Over 100 teeth were tightly packed into its jaws, ready to grind up magnolias and other tough plants. The teeth quickly wore out, but new ones grew ready to replace them.
- **Leonardo.** A *Brachylophosaurus* fossil from Montana, USA, is so well preserved that it is known as a 'dinosaur mummy'. Nicknamed Leonardo, it even contains scaly skin and internal organs.
- **Tough hide.** Leonardo's fossil shows patterns of knobbly bumps on his forelegs. These would have protected him as he waded through the thick undergrowth of the forests where he lived.

Pronounced: BRACK-ee-LOF-uh-SORE-us **Length:** 8.5m (28ft)

Fossils: North America

Hip height: 2.7m (9ft)

Found by: Charles Sternberg, 1936

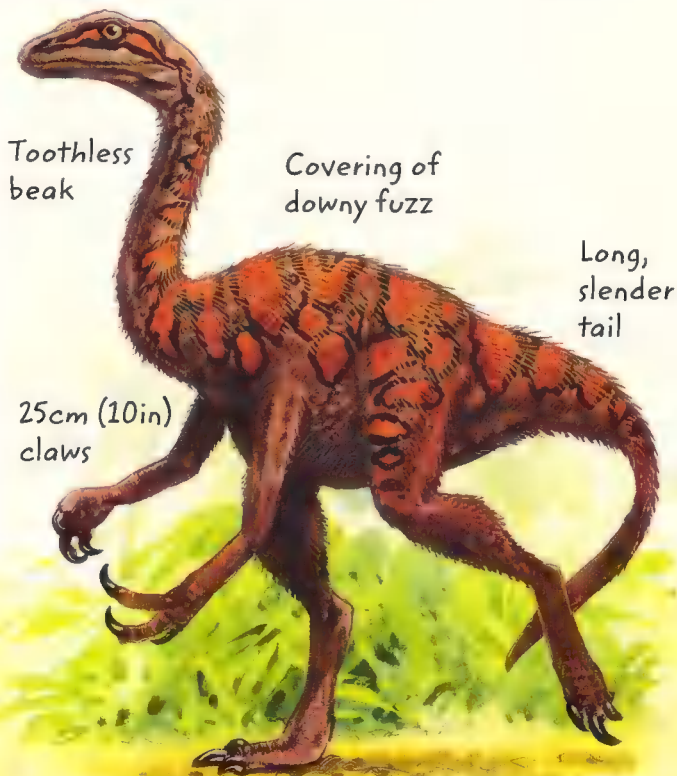
Weight: 3.6 tonnes (4 tons)

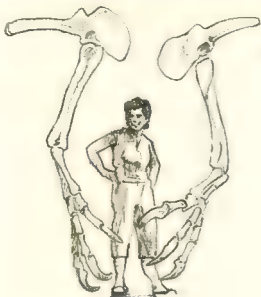
Predators: *Albertosaurus*

Food: leaves, cones

Lived: 83–70 million years ago, Late Cretaceous Period

Deinocheirus





• **Mighty mitts.** *Deinocheirus* means 'awesome hand.' Its fossil arms and shoulders (and a few ribs) survive, showing it was as big as *T. rex*. *Deinocheirus*' discoverer, Zofia Kielan-Jaworowska, is pictured on the left, for scale.

■ **Changing views.** *Deinocheirus*' fearsome remains were found in the Gobi Desert, in Mongolia. At first, they led scientists to see it as a predator like a huge *Allosaurus*. Nowadays, it is pictured as a placid plant-eater resembling a giant ostrich.

■ **Long reach.** This fuzzy giant may have used its massive claws for pulling down branches to reach leaves and fruit.

■ **Ostrich dinosaur.** *Deinocheirus* was an ornithomimosaur, also known as an 'ostrich dinosaur.' Its next-largest relative was half its size.



Pronounced: DIE-no-KY-rus

Length: 12m (40ft)

Fossils: Mongolia

Hip height: 4.6m (15ft)

Found by: Z. Kielan-Jaworowska, 1965

Weight: 6.4 tonnes (7 tons)

Predators: *Tarbosaurus*

Food: leaves, fruit

Lived: 83–65 million years ago, Late Cretaceous Period

Coelophysis



Long, snaky
neck

Grasping
hands

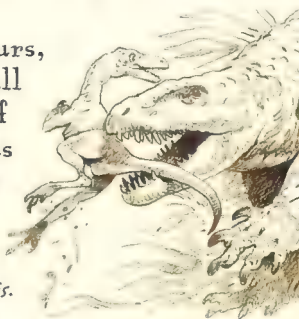
Ran
upright
on two,
long legs

Bird-like feet



- **Light on its feet.** *Coelophysis* had long legs and hollow, lightweight bones, like a bird. (Its name means 'hollow form'.) These made it a fast hunter of small prey such as lizards or young dinosaurs.
- **Early dinos.** The first dinosaurs, such as *Coelophysis*, were small compared to the true rulers of the Triassic Period: monstrous reptiles that looked like huge crocodiles or armadillos.

Postosuchus, a Triassic reptile, hunted *Coelophysis*.



- **Ghostly graveyard.** In 1947, at Ghost Ranch in New Mexico, USA, fossil expert Edwin Colbert unearthed hundreds of *Coelophysis* – the most dinosaur fossils ever found together. They probably died in a drought, and were quickly buried by a muddy flood.
- **Cannibal claims.** Tiny *Coelophysis* bones found inside coprolites (fossilized droppings) provide grisly evidence that this dinosaur may sometimes have eaten the smaller members of its own kind.

Pronounced: SEE-low-FIE-sis

Length: 3m (10ft)

Fossils: North America

Hip height: 90cm (3ft)

Found by: David Baldwin, 1881

Weight: 20kg (44lbs)

Predators: *Postosuchus*

Prey: small reptiles

Lived: 228–203 million years ago, Late Triassic Period

Cryolophosaurus

Fan-like
crest

Four-
fingered
hands

Long,
strong
legs



- **Frozen crest.** *Cryolophosaurus* was the first meat-eating dinosaur to be found in the Antarctic. Its name means 'frozen crested lizard'.
- **Deep-freeze dinosaur?** In the Early Jurassic Period, Antarctica wasn't a barren wasteland at the South Pole, but part of a cool, green continent further north. The world as a whole was warmer, too.
- **Elvisaurus.** *Cryolophosaurus* may have used its unusual crest to attract mates. Its resemblance to the quiffed hairstyle of rock legend Elvis Presley has earned the animal the nickname 'Elvisaurus'.
- **More than it could chew.** A *Cryolophosaurus* fossil was found with the legbone of a prosauropod (an early, long-necked plant-eater) stuck in its throat. The crested carnivore must have choked to death on its lunch.



Prosauropod

Pronounced: CRY-o-LOF-uh-SORE-us

Length: 7m (23ft)

Fossils: Antarctica

Hip height: 2.6m (8½ft)

Found by: William Hammer, 1991

Weight: 700kg (1,500lbs)

Predators: none

Prey: prosauropods

Lived: 189–183 million years ago, Early Jurassic Period

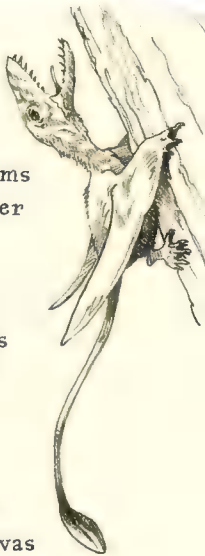
Dimorphodon

1.2m (4ft)
wingspan

Dimorphodon was not a dinosaur, but a pterosaur (winged reptile) that lived at the same time.



- **Climbing claws.** With a heavy head and sprawling legs, *Dimorphodon* probably couldn't fly or walk too well. But its muscular arms and strong, curved claws let it clamber up cliffs or tree trunks with ease.
- **Landlubber.** For a long time, people thought that *Dimorphodon* ate fish, as its beak looked a little like a puffin's. But it probably couldn't swim, and hunted small land animals instead.
- **Little terror.** While it may not have been particularly big, *Dimorphodon* was probably the largest pterosaur of its time.



- **Two types of teeth.** *Dimorphodon* means 'two-shape tooth.' Its beak was lined with many small teeth at the back, and it had several long fangs at the front, which were probably used for snatching up small prey.

Pronounced: die-MORE-fo-don

Length: 1m (3¹/₄ft)

Fossils: England

Height (walking): 35cm (1¹/₈ft)

Found by: Mary Anning, 1828

Weight: 1.2kg (2³/₄lbs)

Predators: unknown

Prey: small mammals, lizards

Lived: 199–189 million years ago, Early Jurassic Period

Dilophosaurus

Double
crest

Four-
fingered
hands

Long,
strong
legs



- **Two crests.** *Dilophosaurus* means 'two-crested lizard.' The males may have had larger crests, and used them to attract females.



- **Killer claws.** This meat-eater was one of the biggest hunters of its day. It would have attacked its victims with the sharp talons on its hands and feet, then ripped into their flesh with its long teeth.

- **Pack animal.** Like its smaller relative *Coelophysis*, this dinosaur's skeleton has been found in groups. This shows it may well have lived and hunted in small family packs.



- **Movie mix-up.** The popular movie 'Jurassic Park' portrayed *Dilophosaurus* as a dog-sized, venom-spitting creature with a large neck-frill. In reality, it was as tall as a horse, and didn't need venom to kill.

Pronounced: die-LOF-oh-SORE-us

Length: 6m (20ft)

Fossils: USA

Hip height: 1.6m (5¹/₄ft)

Found by: Sam Welles, 1942

Weight: 400kg (1,323lbs)

Predators: none

Prey: small animals

Lived: 196–183 million years ago, Early Jurassic Period

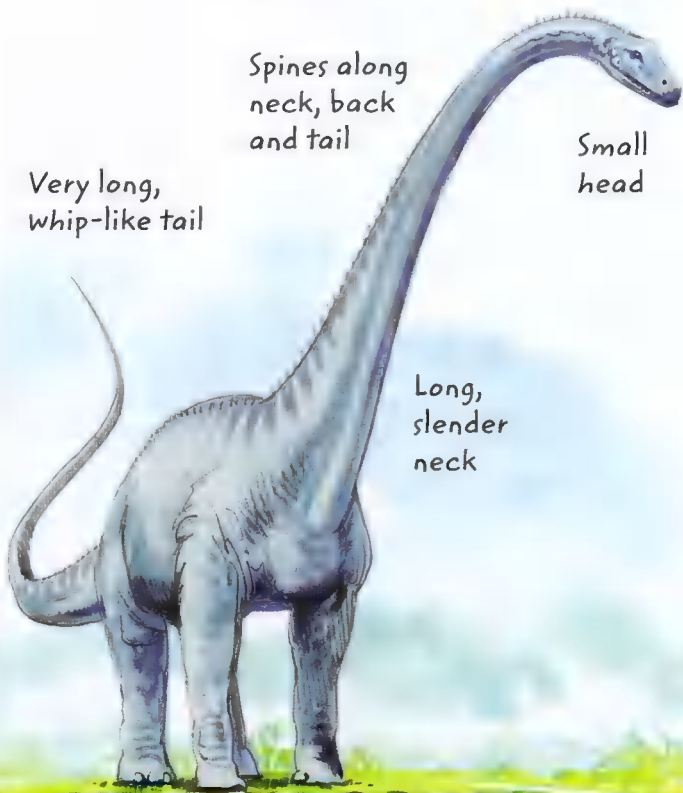
Diplodocus

Spines along
neck, back
and tail

Small
head

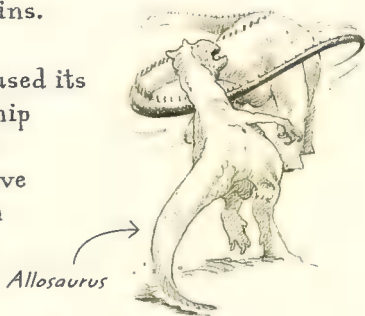
Very long,
whip-like tail

Long,
slender
neck



- **Famously long.** With an 8m (26ft) neck and a 14m (45ft) tail, *Diplodocus* was longer than two buses. It is the longest dinosaur for which a complete skeleton remains.

- **Whiplash.** *Diplodocus* used its incredible tail like a whip to defend itself against enemies. It may even have cracked it to scare them off, or to signal to other dinosaurs.



- **Tip toes.** With longer back legs than front legs, *Diplodocus* could probably rear up, to reach even higher into the tall conifer trees on which it fed.



- **Fast food.** *Diplodocus* ate constantly to power its huge body. It raked its peg-like teeth along branches to strip their needles quickly. It wasted no time chewing, but swallowed them whole.

Pronounced: dip-LOD-o-kus

Length: 27m (88½ft)

Fossils: USA

Hip height: 5m (16½ft)

Found by: B. Mudge, S. Williston, 1877

Weight: 15 tonnes (16.5 tons)

Predators: *Allosaurus*

Food: conifers

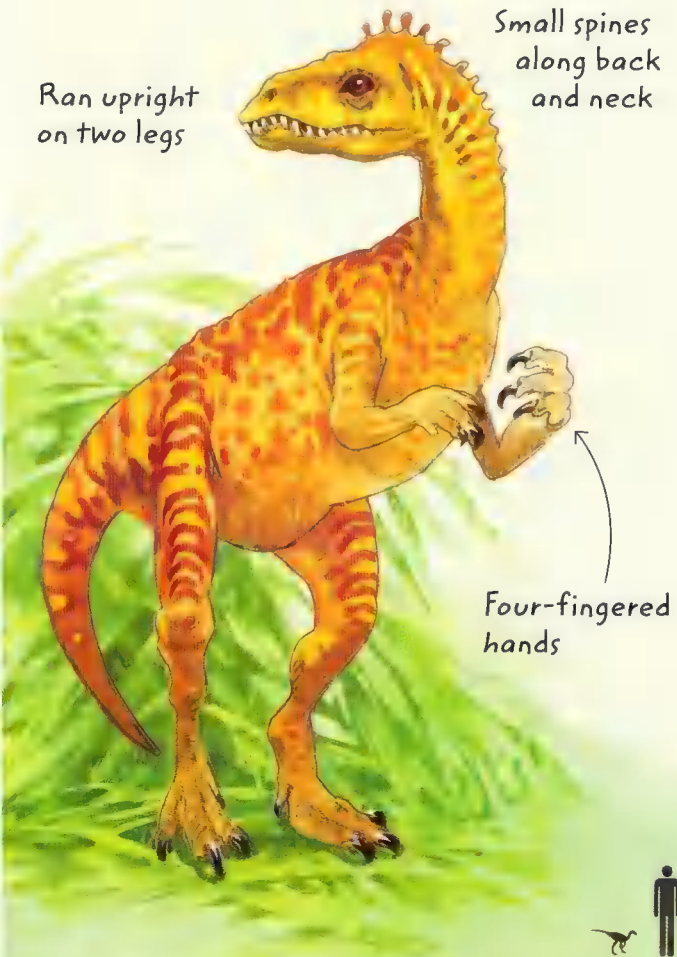
Lived: 155–145 million years ago, Late Jurassic Period

Eoraptor

Ran upright
on two legs

Small spines
along back
and neck

Four-fingered
hands



- **Early burglar.** *Eoraptor* is one of the very oldest known dinosaurs, from the 'dawn of the dinosaurs' in the Late Triassic Period. It had grasping hands for grabbing small prey. Its name means 'dawn thief'.



- **Losing fingers.** Early meat-eating dinosaurs such as *Eoraptor* had four-fingered hands. Later carnivores had just three, or even fewer fingers.



The Valley
of the Moon

- **Moon monster.** Its full name, *Eoraptor lunensis*, means that it is from 'the Valley of the Moon' – the region of Argentina where it was found. This bleak, moon-like terrain holds some of the world's oldest dinosaur fossils.

- **Killer crocs.** Like most Triassic dinosaurs, *Eoraptor* wasn't that big. It would have had to escape from huge, crocodile-like predators such as *Saurosuchus*.

Pronounced: EE-oh-RAP-ter

Length: 1m (3¼ft)

Fossils: Argentina

Hip height: 30cm (1ft)

Found by: Ricardo Martinez, 1991

Weight: 10kg (22lbs)

Predators: *Saurosuchus*

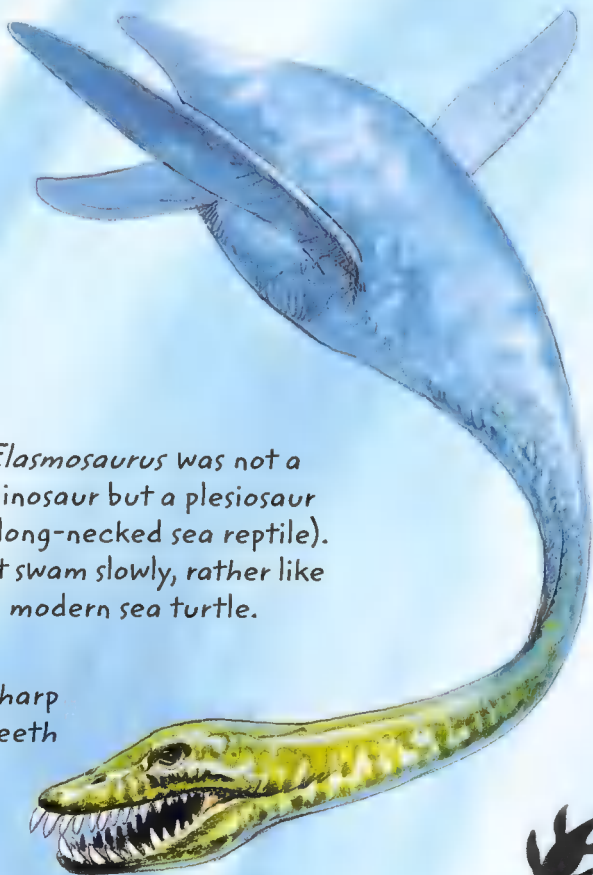
Food: reptiles, insects, plants

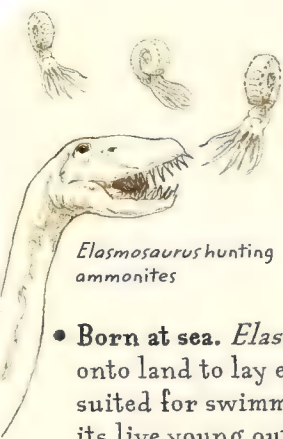
Lived: 228–216 million years ago, Late Triassic Period

Elasmosaurus

Elasmosaurus was not a dinosaur but a plesiosaur (long-necked sea reptile). It swam slowly, rather like a modern sea turtle.

Sharp
teeth





Elasmosaurus hunting ammonites

- **Death from below.** With eyes that faced slightly upward, *Elasmosaurus* probably stalked shellfish called ammonites from below, its head darting out of the murky depths on its extensive neck.
- **Born at sea.** *Elasmosaurus* was too heavy to move onto land to lay eggs, and its flippers were only suited for swimming. It probably gave birth to its live young out at sea.
- **Toothy cage.** This plesiosaur had a mouth chock-full of long, splaying teeth, which interlocked to trap its shelly, squid-like prey inside its jaws.
- **Stone eater.** *Elasmosaurus* didn't have chewing teeth. Instead, it swallowed stones to grind up food inside its stomach – over 250 were found in one fossil. These may also have helped to keep it weighed down near the seabed.



Pronounced: e-LAZ-mo-SORE-us

Length: 14m (46ft)

Fossils: North America

Hip height: 2m (6 $\frac{1}{2}$ ft)

Found by: Theophilus Turner, 1867

Weight: 6 tonnes (6.6 tons)

Predators: pliosaurs

Prey: ammonites, fish

Lived: 83–76 million years ago, Late Cretaceous Period

Dracorex

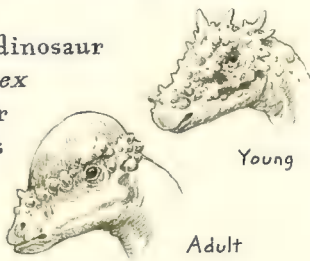
Head covered
with bumps
and spikes

Beak-like
mouth



- **Dragon king.** Its horned, spiky head reminded the expert who named it of a dragon from one of J.K. Rowling's tales of Harry Potter and the Hogwarts school of magic. The full name he gave it, *Dracorex hogwartsia*, means 'dragon king of Hogwarts'.

- **Mistaken identity?** Some dinosaur experts think that *Dracorex* was really just a youngster of the dome-headed species *Pachycephalosaurus*, and that it would lose its horns as it aged.



- **Skull discovery.** In 2004, the near-complete skull of *Dracorex* was found by two brothers and a friend on a fossil-hunting trip in South Dakota, USA.



- **Duelling dragons.** *Dracorex* may have rammed its dragon-like horns against rival males when fighting over females.

Pronounced: DRAKE-oh-rex

Length: 2.4m (8ft)

Fossils: USA

Hip height: 1.1m (3½ft)

Found by: Buckmeier, Saulsbury, 2004

Weight: 34kg (75lbs)

Predators: *Albertosaurus*

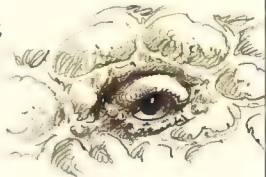
Food: plants, small animals

Lived: 70–65 million years ago, Late Cretaceous Period

Euoplocephalus



- **Tank dinosaur.** This was one of the largest of the ankylosaurs, nicknamed the 'tank dinosaurs'.
- **Extreme shielding.** It was almost entirely clad in protective plates – even on its eyelids. Only its belly was undefended, but even large predators would struggle to flip over this heavyweight.



Shielded eyelids



Albertosaurus

- **Clubbed tail.** Hefty *Euoplocephalus* could well defend itself from attackers, such as the Canadian tyrannosaur *Albertosaurus* (left). Its 20kg (44lb) tail-club could easily break their ankles.

- **Winding airways.** It had twisty nasal passages that took up more space in its skull than its brain. They probably gave it a keen sense of smell, kept it cool, and stopped its head from being too heavy.

Pronounced: YOU-oh-plo-SEF-a-lus

Length: 7m (23ft)

Fossils: North America

Hip height: 1.8m (6ft)

Found by: Lawrence Lambe, 1902

Weight: 2.3 tonnes (2.5 tons)

Predators: *Albertosaurus*

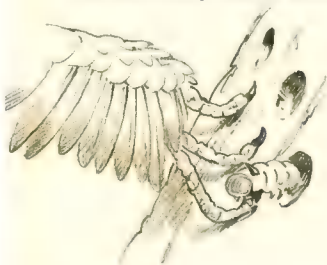
Food: ferns, roots

Lived: 84–65 million years ago, Late Cretaceous Period

Epidendrosaurus



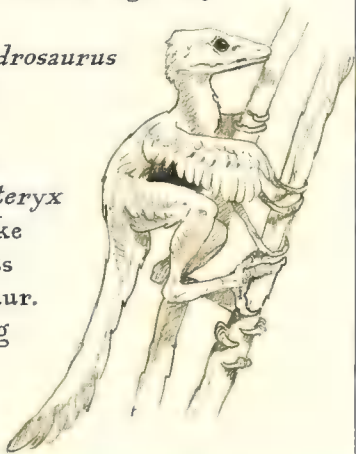
- **Nearly bird.** This tiny Chinese dinosaur had long feathers on its arms and tail, and its feet were ideal for perching on branches. Experts don't count it as an early bird, though, but a very close relative.



- **Finger food.** Its peculiarly long fingers may have been used for picking insect grubs out of bark. A type of lemur called an aye-aye does the same thing today.

- **Treetop dinosaur.** *Epidendrosaurus* means 'upon-tree lizard'.

- **Climbing wing.** Another fossil, named *Scansoriopteryx* ('climbing wing') is so like this one that many experts think it's the same dinosaur. They suggest that its long wing-fingers may have helped it to climb.



Pronounced: EP-ee-DEN-druh-SORE-us

Length: 30cm (1ft)

Fossils: Northern China

Hip height: 12cm (4³/₄in)

Found by: Fucheng Zhang, 2002

Weight: 200g (7oz)

Predators: unknown

Prey: insect grubs

Lived: 164–161 million years ago, Middle Jurassic Period

Eotyrannus



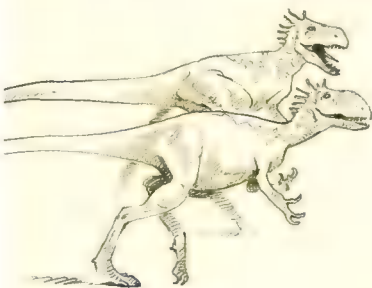
Long arms
with three-
fingered
hands

Long
legs



- ***T. rex* ancestor.** *Eotyrannus* means 'dawn tyrant'. It was an early relative of *Tyrannosaurus* that lived in what is now the Isle of Wight, England.

- **Dinosaur Island.** More dinosaurs have been found on the Isle of Wight than anywhere else in Europe. Up until 10,000 years ago, it was still part of the English mainland.



- **Smaller and swifter.** *Eotyrannus* was much smaller than its famous relative *Tyrannosaurus rex*, but with its long legs, it could probably run much faster.

- **Dino-fuzz.** The fossil of a Chinese cousin of *Eotyrannus*, called *Dilong*, shows downy fuzz on parts of its body, so *Eotyrannus* probably had it too. Scientists now think that tyrannosaurs are related to birds.



Pronounced: EE-oh-tie-RAN-us

Length: 4.5m (14 ³/₄ ft)

Fossils: England

Hip height: 1.8m (6ft)

Found by: Gavin Leng, 1996

Weight: 270kg (600lbs)

Predators: *Neovenator*

Prey: *Hypsilophodon*

Lived: 130–125 million years ago, Early Cretaceous Period

Hatzegopteryx

Hatzegopteryx was not a dinosaur, but the biggest of the pterosaurs, winged reptiles that lived at the same time.

2m (6½ft)
beak

12m (40ft)
wingspan

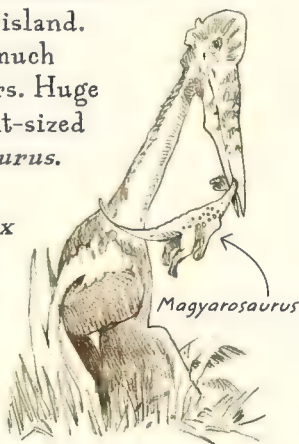
Long, stiff neck

Long
limbs

Small, padded feet



- **King of wings.** *Hatzegopteryx* stood as tall as a giraffe, and had the wingspan of a small plane. Its beak was so enormous that it could have swallowed a grown man in a single gulp.
- **Terror-saur.** Its remains were found near Hatzeg in Transylvania, the legendary homeland of Dracula. Its full name, *Hatzegopteryx thambema*, means 'monster wing from Hatzeg'.
- **Giants and dwarfs.** In Late Cretaceous times, Transylvania was an island. Island animals often grow much larger or smaller than others. Huge *Hatzegopteryx* hunted a pint-sized sauropod called *Magyarosaurus*.
- **Land strider.** *Hatzegopteryx* could fly, but it is thought to have hunted in woodland clearings. It folded up its wings and walked on all fours, plucking up prey with its mighty beak.



Pronounced: HATS-uh-GOP-ter-ix

Fossils: Transylvania, Romania

Found by: Dan Grigorescu, 1975

Predators: None

Lived: 70–65 million years ago, Late Cretaceous Period

Length: 8m (26 $\frac{1}{4}$ ft)

Hip height: 2.5m (6 $\frac{1}{2}$ ft)

Weight: 1 tonne (1.1 tons)

Prey: Dwarf dinosaurs

Gigantoraptor

Toothless
beak

Long feathers on
arms and tail

Gangly
legs



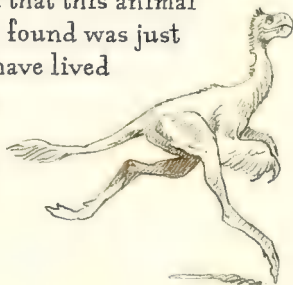


■ **Chicken-a-saurus.** Imagine a chicken the size of *T. rex* and you'll be close to *Gigantoraptor* – one of the biggest feathered animals ever.

■ **Big surprise.** Chinese scientist Xu Xing ('shoe shing') found its bones in 2005. He was amazed to see that, like little *Incisivosaurus*, it was one of the oviraptorosaurs. This was a group of bird-like dinosaurs that until then were thought to be no bigger than emus.

■ **Growth spurt.** Experts think that this animal grew very rapidly. The fossil found was just 11 years of age, but it might have lived to 18 and grown even bigger.

■ **Jumbo jogger.** *Gigantoraptor* was surprisingly light, and probably ran faster than any dinosaur its size.



Pronounced: jy-GANT-oh-rap-ter

Length: 8m (26ft)

Fossils: Gobi Desert, N China

Hip height: 3m (9³/₄ft)

Found by: Xu Xing, 2005

Weight: 1.5 tonnes (1.7 tons)

Predators: *Tarbosaurus*

Food: reptiles, plants

Lived: 70–65 million years ago, Late Cretaceous Period

Giganotosaurus

Spines on
head and
neck

Massive
head

Three-
fingered
hands



Walked upright
on two long legs



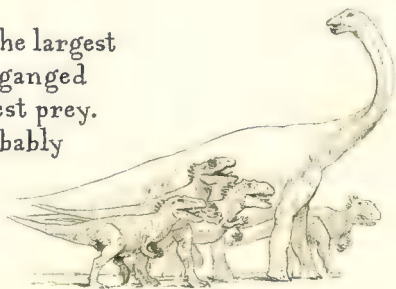


- **Southern giant.** *Giganotosaurus* was a huge, South American meat-eater, slightly larger than the North American *T. rex*. Its name means 'giant southern lizard'.

- **Shark-toothed killers.** It belonged to a group called the carcharodontosaurs, whose jagged, flesh-slicing teeth reminded experts of *Carcharodon* – another name for the great white shark.

- **Scenting prey.** Its brain was only about half the size of *T. rex*'s, so it was less intelligent, but its superb sense of smell led it straight to its victims.

- **Big game hunters.** The largest predators may have ganged up to hunt the largest prey. *Giganotosaurus* probably hunted in packs to bring down the enormous sauropod *Argentinosaurus*.



Pronounced: jig-a-NOTE-o-SORE-us

Length: 12.5m (41ft)

Fossils: Argentina

Hip height: 4.6m (15ft)

Found by: Ruben Carolini, 1993

Weight: 6.5 tonnes (7.1 tons)

Predators: none

Prey: *Argentinosaurus*

Lived: 112–94 million years ago, Late Cretaceous Period

Heterodontosaurus

Large eyes

Legs longer
than arms

Tusks

Long,
grasping
hands



- **Little ancestor.** This fox-sized creature was an early ornithischian ('bird-hipped') dinosaur. This group included many large plant-eaters, such as *Stegosaurus* and *Triceratops*.

- **Teeth.** *Heterodontosaurus* means 'differently toothed lizard'. Most reptiles have one type of tooth, but it had three: small, sharp ones for nipping plants, closely packed cheek teeth for chewing, and large tusks.



- **Tusk tasks.** It may have used its tusks to fend off predators, or to spar with rivals. It might also have used them sometimes to add small animals to its vegetarian diet.



- **Desert digger.** *Heterodontosaurus* may have used its long fingers for digging burrows, to shelter from the desert heat.

Pronounced: HET-er-oh-DONT-oh-SORE-us **Length:** 1m (3 $\frac{1}{4}$ ft)

Fossils: Lesotho; South Africa

Hip height: 50cm (1 $\frac{3}{4}$ ft)

Found by: Alan Charig, 1962

Weight: 5kg (11lbs)

Predators: *Syntarsus*

Food: tough plants, roots

Lived: 200–190 million years ago, Early Jurassic Period

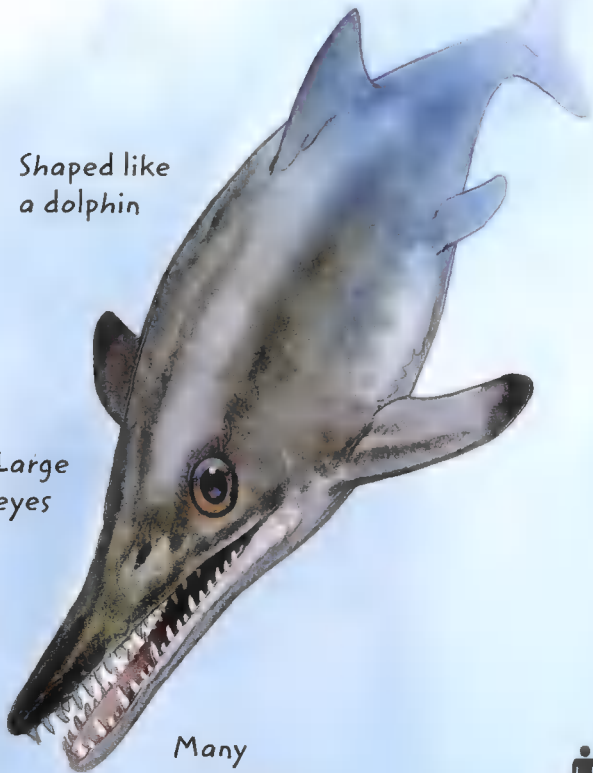
Ichthyosaurus

Swished its tail from
side to side, like a fish

Shaped like
a dolphin

Large
eyes

Many
sharp teeth



- **Fish lizards.** *Ichthyosaurus* means 'fish lizard'. It gives its name to the ichthyosaurs, a group of dolphin-like sea reptiles (not dinosaurs).
- **Live birth.** Unlike most reptiles, ichthyosaurs did not lay eggs, but gave birth to live young at sea. Ichthyosaurs couldn't breathe underwater, so they were born tail-first to stop them from drowning. One amazing fossil shows an ichthyosaur giving birth.
- **Fossil girl.** The first complete *Ichthyosaurus* fossil was excavated in Lyme Regis, England, in 1811, by 12-year-old Mary Anning (her brother found it). She later became one of the first great fossil experts.
- **Leaping and diving.** It is likely that ichthyosaurs chased their prey as dolphins do, leaping briefly out of the sea for air before diving again.



Pronounced: IK-thee-oh-SORE-us

Length: 1.8m (6ft)

Fossils: England, Germany

Height: 50cm (1³/₄ft)

Found by: Joseph & Mary Anning, 1811

Weight: 90kg (200lbs)

Predators: pliosaurs

Prey: fish, belemnites

Lived: 200–190 million years ago, Early Jurassic Period

Iguanodon

This bulky herbivore (plant-eater) grazed on four legs, but it could also stand up to feed from trees.

Toothless
beak

Large
thumb-
spikes



- **Iguana tooth.** Gideon Mantell discovered *Iguanodon* in Sussex, England. It was one of the first dinosaurs ever found. He gave it its name, meaning 'iguana tooth', because its teeth look like an iguana's.

- **Swiss Army hands.** The fingers on its hands had different functions, like a Swiss Army knife:

Thumb-spike,
probably for
fighting

Middle
fingers
joined into
a hoof

Little
finger
to grip
plants



- **Early ideas.** When Mantell first pieced *Iguanodon*'s skeleton together, little was known about dinosaurs. At first, people thought its thumb-spike was a rhino-like nose horn.



- **Dinner-saur.** A model *Iguanodon*, built for the 1851 Great Exhibition in London, was later adapted so that a group of Victorian scientists could eat their New Year's dinner together inside it.

Pronounced: ig-WAH-nuh-don

Length: 13m (42 ³/₄ ft)

Fossils: Europe, Mongolia, USA

Hip height: 3.8m (12 ¹/₂ ft)

Found by: Gideon Mantell, 1822

Weight: 5.4 tonnes (6 tons)

Predators: *Megalosaurus*

Food: conifers, cycad plants

Lived: 140–99 million years ago, Early Cretaceous Period

Liopleurodon

Short tail

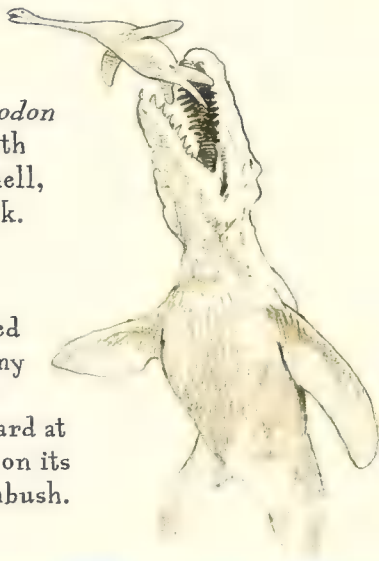
Four huge
flippers

Liopleurodon was not a dinosaur but a pliosaur: a type of short-necked sea reptile that lived at the same time.

2m
(6½ft)
jaws



- **Sea monster.** *Liopleurodon* was as long as a humpback whale, and was the biggest predator in the Jurassic seas.
- **Jaws.** Its jaws were among the biggest ever known. With teeth twice as long as those of *T. rex*, they would have been powerful enough to crush a car, and could easily cut its prey in two.
- **On the trail.** *Liopleurodon* sniffed out its prey with a powerful sense of smell, like a great white shark.
- **Ocean ambush.** It is thought to have watched its prey from the gloomy depths below. It would then propel itself upward at great speed, chomping on its victims in a sudden ambush.



Pronounced: LIE-up-LURE-uh-don	Length: 15m (49ft)
Fossils: England, France, Germany	Hip height: 3.2m (10 ¹ / ₂ ft)
Found by: H.E. Sauvage, 1873	Weight: 5 tonnes (5.5 tons)
Predators: none	Prey: ichthyosaurs, fish, sharks
Lived: 164–150 million years ago, Middle–Late Jurassic Periods	

Leaellynasaura

Large eyes ideal for
seeing in the dark,
winter months

Its body may
have been
covered
in fuzz.

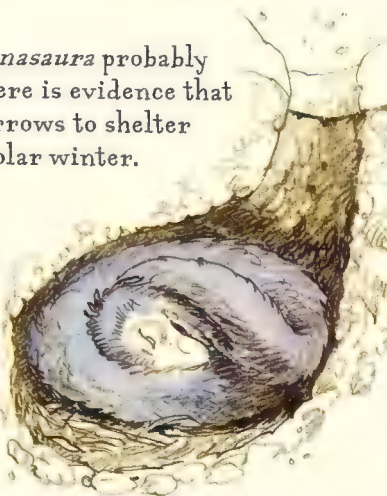
Five-
fingered
hands

Long
legs

Extremely
long tail



- **Leaellyn's dinosaur.** This little Australian dinosaur was discovered by fossil experts Thomas Rich and Patricia Vickers-Rich. They named it after their young daughter, Leaellyn.
- **Cold down under.** When *Leaellynasaura* lived, Australia was joined to Antarctica, which was not as icy as the Antarctic now, and even had trees. It was still a tough place to survive in winter, though.
- **Winter home.** *Leaellynasaura* probably lived in herds, and there is evidence that they may have dug burrows to shelter in during the harsh polar winter.
- **Tremendous tail.** *Leaellynasaura*'s tail was three times the length of its body. The animal may have curled it around itself to keep warm.



Pronounced: lee-ELL-in-a-SORE-a

Length: 2.5m (8ft)

Fossils: Australia

Hip height: 50cm (1¾ft)

Found by: T. Rich, P. Vickers-Rich, 1989

Weight: 9kg (20lbs)

Predators: dwarf allosaurs

Food: plants

Period: 125–100 million years ago, Early Cretaceous Period

Incisivosaurus

Big
buck
teeth

Large,
three-
fingered
hands

Long
feathers
on arms
and tail





■ **Bunny teeth.**

Incisivosaurus had very unusual, buck teeth. It probably gnawed on plants like a rabbit.

- **Old timer.** This turkey-sized creature is the oldest-known member of a group of feathered, plant-eating dinosaurs called oviraptorosaurs. Most of them had long hands, short tails and toothless beaks.
- **Identity puzzle.** Only *Incisivosaurus*'s skull has been discovered. Another fossil, named *Protarchaeopteryx*, with a complete body but just scraps of skull, was found in the same area. Some experts think they're the same dinosaur.
- **Egg warming.** Fossilized nests suggest that, like birds, oviraptorosaurs used their long arm- and tail-feathers to keep their eggs warm while they sat on them.



Pronounced: in-SIZE-iv-oh-SORE-us

Length: 90cm (3ft)

Fossils: China

Hip height: 40cm (1 $\frac{1}{4}$ ft)

Found by: Xu Xing, 2002

Weight: 3.5kg (8lbs)

Predators: *Dilong*

Food: plants, seeds, roots

Lived: 130–125 million years ago, Early Cretaceous Period

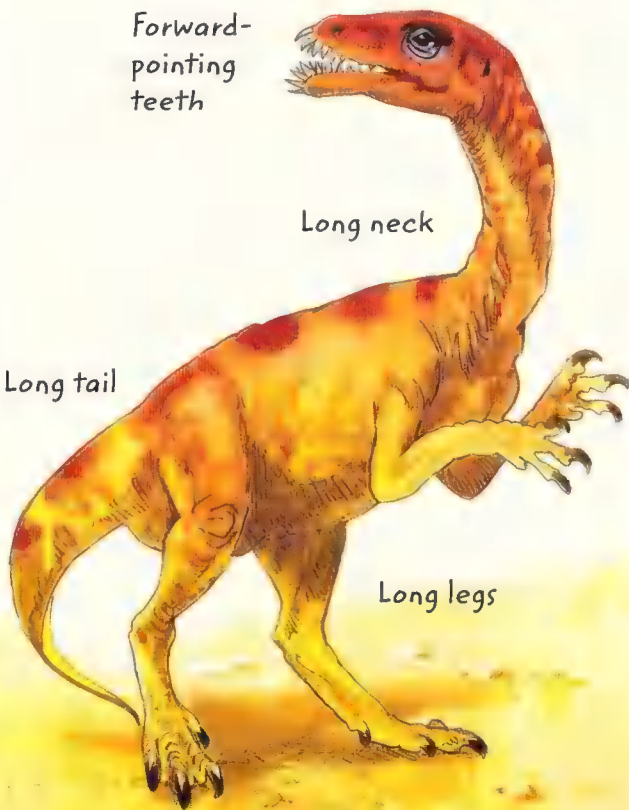
Masiakasaurus

Forward-
pointing
teeth

Long neck

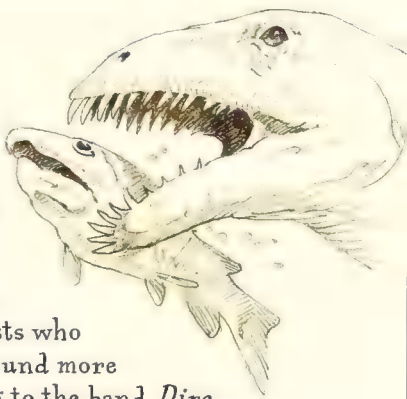
Long tail

Long legs



- **Vicious lizard.** 'Masiaka' means 'vicious' in the language of Madagascar, which is the African island where *Masiakasaurus* was found.

- **Ferocious teeth.** Its scary-looking teeth jut out of its mouth, and were probably used to spear fish or trap large insects.



- **Rockin' reptile.** The music-loving scientists who dug up this animal found more bones when listening to the band *Dire Straits*. So they named it *Masiakasaurus knopfleri*, after lead guitarist, Mark Knopfler.
- **Gondwana.** Dinosaurs related to *Masiakasaurus* have been found in India and South America. These places were once joined to Madagascar as part of a 'super-continent' known as Gondwana.

Pronounced: ma-SHEE-a-ka-SORE-us **Length:** 1.8m (6ft)

Fossils: Madagascar

Hip height: 80cm (2½ft)

Found by: Scott Sampson, 1999

Weight: 35kg (77lbs)

Predators: *Majungatholus*

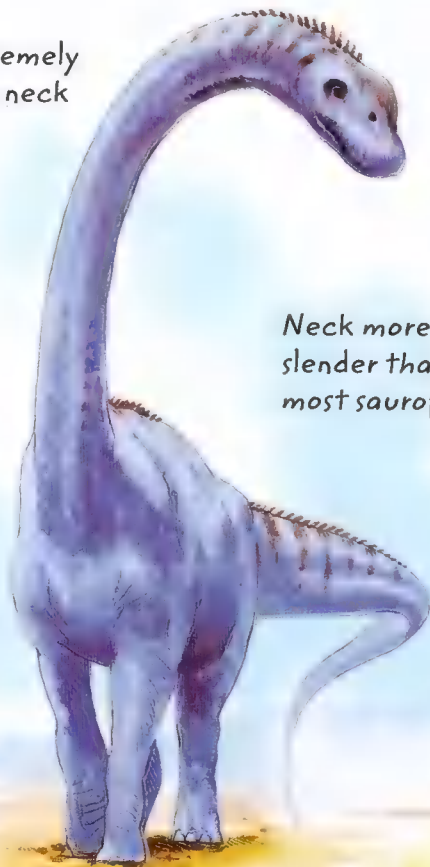
Prey: fish, mammals, insects

Lived: 83–70 million years ago, Late Cretaceous Period

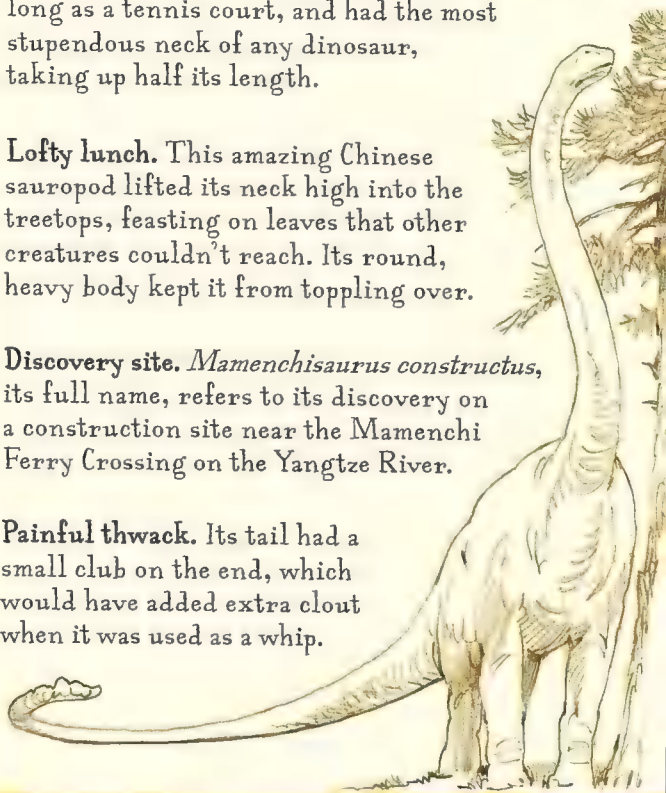
Mamenchisaurus

Extremely
long neck

Neck more
slender than
most sauropods



- **Longest neck.** *Mamenchisaurus* was as long as a tennis court, and had the most stupendous neck of any dinosaur, taking up half its length.
- **Lofty lunch.** This amazing Chinese sauropod lifted its neck high into the treetops, feasting on leaves that other creatures couldn't reach. Its round, heavy body kept it from toppling over.
- **Discovery site.** *Mamenchisaurus constructus*, its full name, refers to its discovery on a construction site near the Mamenchi Ferry Crossing on the Yangtze River.
- **Painful thwack.** Its tail had a small club on the end, which would have added extra clout when it was used as a whip.



Pronounced: ma-MEN-chee-SORE-us

Length: 26m (85¼ft)

Fossils: Southwest China

Hip height: 6.3m (21ft)

Found by: Zhongjian Yang, 1952

Weight: 18 tonnes (20 tons)

Predators: *Yangchuanosaurus*

Food: conifer leaves

Lived: 161–156 million years ago, Late Jurassic Period

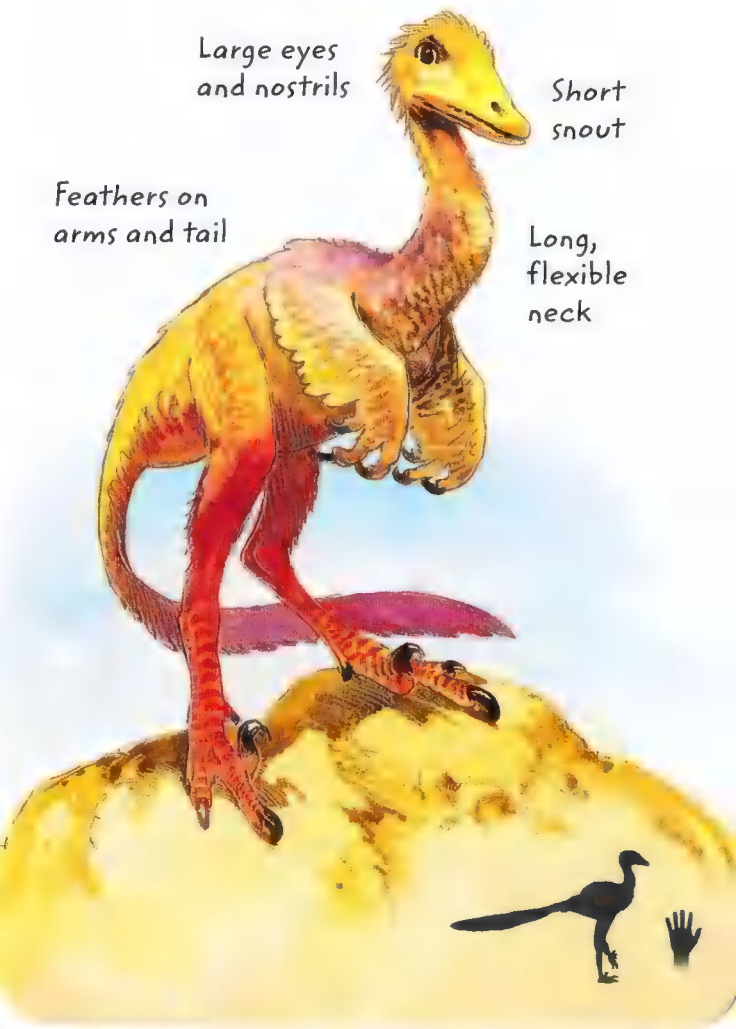
Mei

Large eyes
and nostrils

Short
snout

Feathers on
arms and tail

Long,
flexible
neck



Mei's fossil was in a sleeping position.

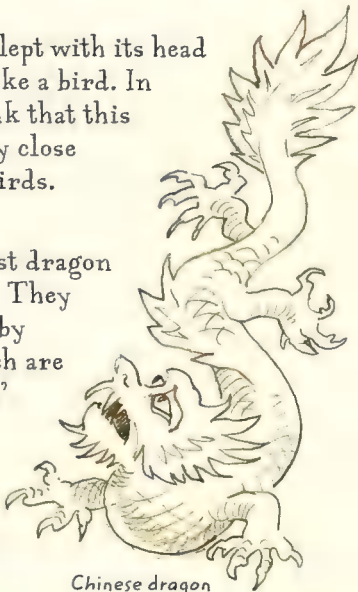


- **Sleeping dragon.** *Mei*'s fossil shows it died in its sleep, buried in volcanic ash. Its full name, *Mei long*, is Chinese for 'soundly sleeping dragon'.

- **Feathered family.** *Mei* slept with its head tucked under its arm, like a bird. In fact, scientists now think that this habit shows it was a very close relative of the earliest birds.

- **Dragon bones.** The oldest dragon legends come from Asia. They may have been inspired by prehistoric fossils, which are known as 'dragon bones' in China, even today.

- **Short and snappy.** *Mei long* is the shortest of all dinosaur names.



Chinese dragon

Pronounced: may lung

Fossil: China

Found by: Xu Xing, 2004

Predators: *Dilong*

Lived: 128–125 million years ago, Early Cretaceous Period

Length: 70cm (2 $\frac{1}{4}$ ft)

Hip height: 30cm (1ft)

Weight: 1kg (2lbs)

Prey: lizards, insects

Microaptor

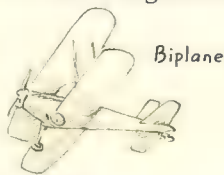
Toothed
beak

Four wings

Long tail



- **Feathered glider.** *Microraptor* probably couldn't fly, but may have lived in trees, gliding from branch to branch. It may have held out its four wings like a biplane.



Biplane



- **Four-fathers.** Experts long suspected that birds had feathered dinosaur ancestors, but were shocked by *Microraptor*, as it is evidence that they started out with four wings.

- **Li'l raptor.** *Microraptor* means 'little thief'. It is part of the same family as other speedy, bird-like 'raptor' dinosaurs, such as *Velociraptor*.



- **In a flap.** To get into a tree, *Microraptor* probably ran straight up it, flapping its wings to keep its feet pressed onto the trunk.

Pronounced: MY-crow-RAP-ter

Length: 77cm (2½ft)

Fossils: China

Hip height: 17cm (6¾in)

Found by: Xu Xing, 1999

Weight: 4.5kg (10lbs)

Predators: *Dilong*

Food: insects

Lived: 130–125 million years ago, Early Cretaceous Period

Mononykus

Downy fuzz

Long,
thin
tail

Single
claw on
each hand

Very
long
legs



- **Single claw.** Dinosaur experts thought that *T. rex*'s two fingers were unusual until *Mononykus* was found. Its name means 'single claw'. It did, in fact, have more claws, but they were too tiny to see.



- **Termite terror.** This turkey-sized dinosaur is thought to have used its strong claws for breaking into dead trees, to feed on the termites and their grubs inside.

- **Lengthy legs.** *Mononykus*' legs may seem to be ludicrously long, but it needed to be fast to escape dangerous predators such as *Velociraptor*.

- **Fossil hoard.** *Mononykus* was discovered in Ukhaa Tolgod, in Mongolia's Gobi Desert.

The area is an amazing source of dinosaur fossils. Over 100 have been found in just 50km² (19 square miles).



Pronounced: MON-o-NIE-kus

Length: 90cm (3ft)

Fossils: Mongolia

Hip height: 60cm (2ft)

Found by: Altangerel Perle, 1993

Weight: 4.5kg (10lbs)

Predators: *Velociraptor*

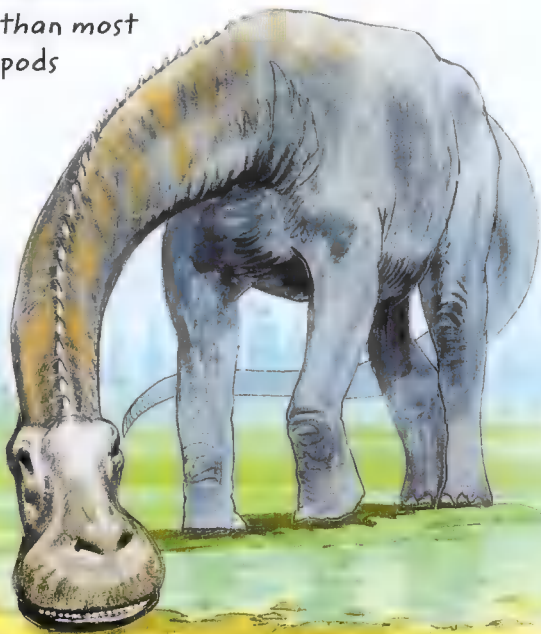
Prey: termites

Lived: 83–70 million years ago, Late Cretaceous Period

Nigersaurus

Short spines along
neck and back

Much shorter
neck than most
sauropods



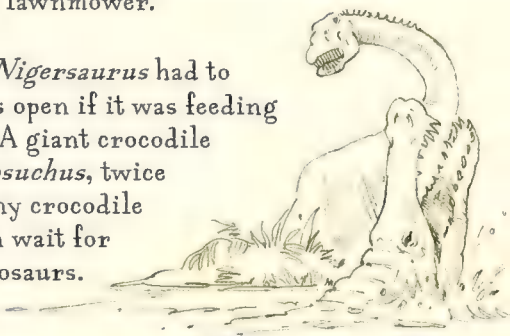
Broad mouth with
hundreds of teeth





Nigersaurus skull
showing rows of
replacement teeth

- **Wide smile.** Compared to its head, this North African sauropod had the widest jaws of any dinosaur.
- **Backup teeth.** *Nigersaurus*' jaws held 600 teeth. It fed on tough plants such as horsetails, which wore them down in weeks, but it always had rows of replacement teeth growing behind them.
- **Living lawnmower.** It is thought to have fed by swinging its lightweight head across the ground, shearing plants with its many needle-shaped teeth, like a lawnmower.
- **Supercroc.** *Nigersaurus* had to keep its eyes open if it was feeding near water. A giant crocodile called *Sarcosuchus*, twice as long as any crocodile today, lay in wait for unwary dinosaurs.



Pronounced: nee-JAIR-SORE-us

Length: 15m (49ft)

Fossils: Niger

Hip height: 2.5m (8ft)

Found by: Didier Dutheil, 1997

Weight: 5.4 tonnes (6 tons)

Predators: *Sarcosuchus*

Food: ferns, horsetails

Lived: 118–110 million years ago, Early Cretaceous Period

Parasaurolophus

Very long,
curved crest

Sturdy body



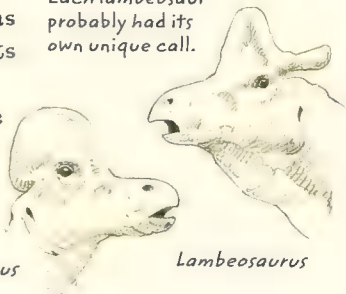
Narrow,
duck-
like bill



- **Best crest.** *Parasaurolophus* was one of the lambeosaurs, a group of duckbilled dinosaurs with variously shaped crests. At up to 1.8m (6ft), its crest was by far the longest.

- **Honk! Honk!** Its crest was hollow, and scientific tests show that air vibrating inside it would have made a trombone-like sound, which the animal could use to signal to its herd.

Each lambeosaur probably had its own unique call.



Corythosaurus

Lambeosaurus

- **Egg shelters.** *Parasaurolophus* nests were shallow holes in the ground. They probably covered their eggs with dry leaves to keep them warm.



Young *Parasaurolophus*

- **Growing up.** *Parasaurolophus* crests grew with age. Adult males had the longest crests, and probably displayed them to impress females.

Pronounced: PAR-a-sore-OL-off-us

Length: 10m (33ft)

Fossils: North America, Asia

Hip height: 3.5m (11½ft)

Found by: William Parks, 1922

Weight: 1.8 tonnes (2 tons)

Predators: tyrannosaurs

Food: conifers, seeds, fruit

Lived: 80–73 million years ago, Late Cretaceous Period

Protoceratops

Thick tail

Short horns
on nose and
cheeks

Bony
frill

Sharp
beak

This is a female
adult dinosaur.



- **Old horn-face.** *Protoceratops* means 'first horned face'. It was an early member of the ceratopsians, a group of plant-eating dinosaurs with big heads, horns and frills. *Triceratops* was a ceratopsian, too.
- **Stages of life.** Dozens of *Protoceratops* fossils found in Mongolia's Gobi Desert tell us how they looked at various stages of life (faces shown):



Egg



Baby



Young male



Adult male

- **Gold-guarding griffin.** Ancient Mongolians who found *Protoceratops* fossils in gold mines probably started the legend of the griffin: a fierce beast with an eagle's head, long ears, and a lion's body.



Protoceratops



Griffin

Pronounced: PROH-toh-SERA-tops

Fossils: Mongolia, China

Found by: J.B. Shackleford, 1922

Predators: *Velociraptor*

Lived: 86–70 million years ago, Late Cretaceous Period

Length: 2m (6½ft)

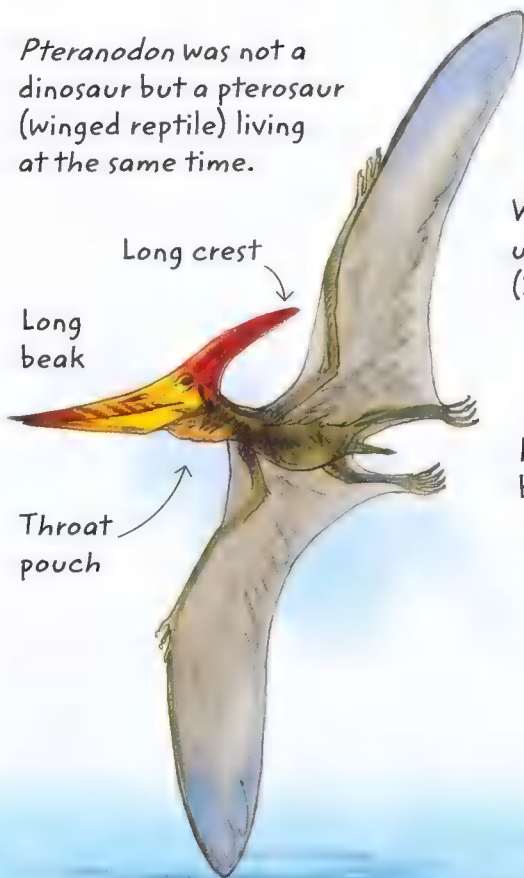
Hip height: 1m (3¼ft)

Weight: 350kg (772lbs)

Food: cycad plants

Pteranodon

Pteranodon was not a dinosaur but a pterosaur (winged reptile) living at the same time.



Long crest

Long
beak

Throat
pouch

Wingspan:
up to 7m
(23ft)

Fuzzy
body

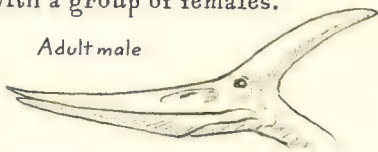


- **Fight for the right.** *Pteranodon* males were 1½ times the size of females, with much longer crests. At mating time, they competed with other males for the right to mate with a group of females.

Adult female

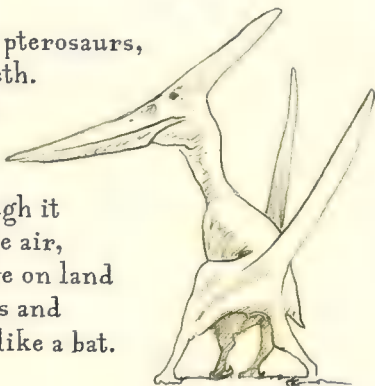


Adult male



- **Seafood diet.** *Pteranodon* lived on coasts, and hunted fish. It probably swooped over the waves, snatching fish from the sea and carrying them off in its pelican-like pouch.

- **No teeth.** Unlike most pterosaurs, *Pteranodon* had no teeth. Its name is Greek for 'toothless wing'.



- **Down to earth.** Although it was most at home in the air, *Pteranodon* could move on land by folding up its wings and walking on all fours, like a bat.

Pronounced: ter-RAN-o-don

Length: 3.3m (10¾ft)

Fossils: Americas, Europe, Asia

Hip height: 1m (3¼ft)

Found by: Othniel C. Marsh, 1870

Weight: 100kg (220lbs)

Predators: unknown

Prey: fish

Lived: 84–77 million years ago, Late Cretaceous Period

Pterodaustro

Over 1,000 long,
bristle-like teeth

Wingspan
up to 2.5m
(8 $\frac{1}{4}$ ft)

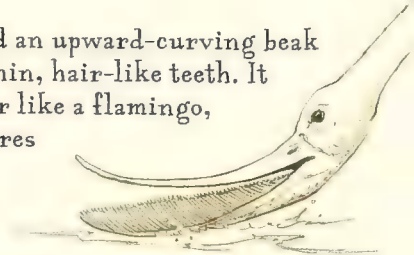


Broad, webbed feet
with sharp claws



- **Southern wing.** *Pterodaustro* is not a dinosaur, but a pterosaur (winged reptile) that was discovered in South America. Its name means 'southern wing'.

- **Filter-feeder.** It had an upward-curving beak packed with long, thin, hair-like teeth. It used its beak, rather like a flamingo, to filter tiny creatures called plankton out of the sea.



- **Flamingo pink.** Scientists think that *Pterodaustro*'s flamingo-like diet probably turned its fuzzy body a bright, flamingo pink.

- **Family life.** Hundreds of *Pterodaustro* fossils were found together in Argentina, showing that the animals lived in colonies.

Fossils from every stage of life were found, including one amazing egg with a baby still inside.



Baby *Pterodaustro* in egg

Pronounced: TEH-ro-DAW-stroh

Fossils: Argentina, Chile

Found by: José Bonaparte, 1970

Predators: unknown

Lived: 112–99 million years ago, Early Cretaceous Period

Length: 1.1m (3½ft)

Hip height: 50cm (1½ft)

Weight: 10kg (22lbs)

Food: plankton

Pterodactylus

Pterodactylus was not a dinosaur, but a gull-sized pterosaur (winged reptile) that lived alongside them.

Thick fuzz on
neck and back

Rounded crest

Short
tail

Wingspan up
to 1.2m (4ft)

Large, webbed feet



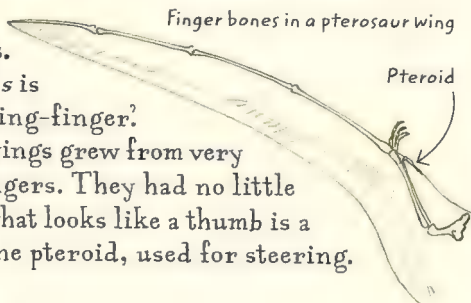
- **First find.** Found in Germany, this was the first pterosaur ever discovered. At first, scientists had no clue what it was, guessing that it lived under the sea.

- **Wingfingers.**

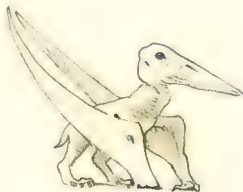
Pterodactylus is

Greek for 'wing-finger'.

Pterosaurs' wings grew from very long ring fingers. They had no little finger, and what looks like a thumb is a bone called the pteroid, used for steering.



- **Pelican pouch.** Many *Pterodactylus* fossils have been found. Some even record traces of skin, and show that the animals had a throat pouch like a pelican, and webbed feet for wading in the sea.



- **Little flappers.** *Pterodactylus* young are known as flaplings. They were no bigger than a man's thumb, but were already able to fly.

Pronounced: TER-oh-DAK-til-us

Length: 60cm (2ft)

Fossils: Europe, Tanzania

Hip height: 30cm (1ft)

Found by: unknown, 1770s

Weight: 1kg (2lbs)

Predators: unknown

Prey: small shore creatures

Lived: 155–150 million years ago, Late Jurassic Period

Sauroposeidon

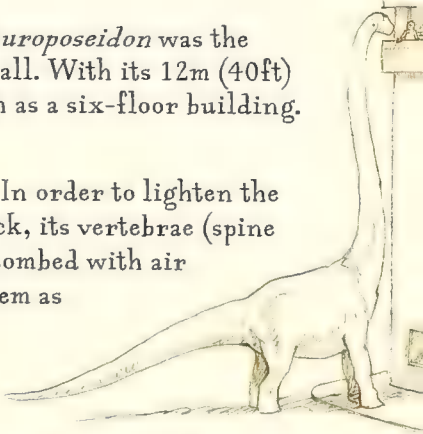
Spines along
neck and
back

This sauropod would
have towered over
its nearest relative,
Brachiosaurus.

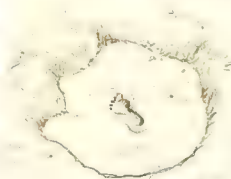


- **Taller than tall.** *Sauroposeidon* was the tallest dinosaur of all. With its 12m (40ft) neck, it was as high as a six-floor building.

- **Honeycomb bones.** In order to lighten the load of its great neck, its vertebrae (spine bones) were honeycombed with air pockets, making them as light and strong as bird bones.



- **Jailhouse giant.** It was discovered by an Oklahoma prison officer, in farmland by the prison where he trained guard dogs. At first, its huge vertebrae were thought to be tree trunks.



A human footprint inside a *Sauroposeidon* track, showing its size.

- **Earthquake god.** *Sauroposeidon* means 'Poseidon's lizard'. Poseidon was the Ancient Greek god of the sea and earthquakes. The ground would certainly have trembled when this colossal beast walked by.

Pronounced: SORE-oh-puh-SIDE-on

Length: 28m (92ft)

Fossils: USA

Hip height: 18m (59ft)

Found by: Bobby Cross, 1994

Weight: 45 tonnes (50 tons)

Predators: *Acrocanthosaurus*

Food: conifer leaves

Lived: 112–100 million years ago, Early Cretaceous Period

Spinosaurus

Long, crocodile-
like jaws

1.8m
(6ft)
sail

30cm (1ft)
claws

Walked on
two legs

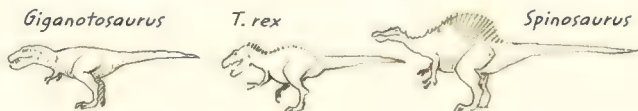


- **Spiny sail.** Its name refers to the spiny sail on its back. The sail may have made it look even bigger, to scare off rivals, or it may have helped it to control its temperature.

- **Fish hunters.** Like its cousin *Baryonyx*, this dinosaur's long, narrow jaws and high nostrils were ideal for fishing underwater. It ate fish, such as *Mawsonia*, which grew up to 3m (10ft) long.



- **Mega meat-eater.** *Spinosaurus* was the largest land carnivore ever, standing head and shoulders above even *Giganotosaurus* and the infamous *T. rex*.



- **Casualty of war.** *Spinosaurus* was unearthed in 1911 by German fossil expert Ernst Stromer. Unfortunately, the Munich museum which housed its skeleton in the Second World War was near the Nazi HQ, and in 1944 the Allies bombed it to pieces.

Pronounced: SPY-no-SORE-us

Length: 16m (52½ft)

Fossils: Egypt, Morocco

Hip height: 4.5m (14¾ft)

Found by: R. Markgraf, 1911

Weight: 5.5 tonnes (6 tons)

Predators: none

Prey: fish, dinosaurs, pterosaurs

Lived: 96–94 million years ago, Late Cretaceous Period

Sinosauropteryx

Very long tail
with white rings

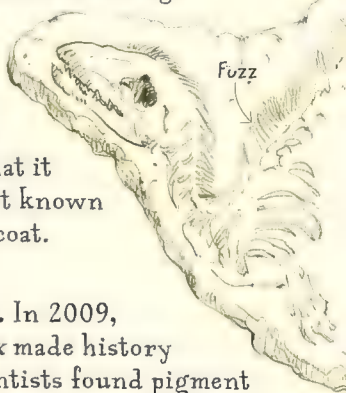
Fuzzy
orange
coat

Three-
fingered
hands



■ **Chinese puzzle.** Discovered in China, this little dinosaur was at first thought to be a primitive bird. Its full name, *Sinosauropteryx prima*, means 'first Chinese lizard wing'.

■ **Fuzzy find.** Its fossils show details of downy fuzz on its body. Experts were startled to realize that it wasn't a bird, but the first known dinosaur with a feathery coat.



■ **Orange ringtail.** In 2009, *Sinosauropteryx* made history again when scientists found pigment cells preserved in its remains. These cells provided the first firm evidence of the shade of a dinosaur's coat.

■ **Slimline dino.** It had a very narrow body. Some experts think this may have helped it to slip easily between the trees in the dense forests where it lived.



Pronounced: SIGH-no-sore-OP-ter-ix

Length: 1.3m (4¹/₄ft)

Fossils: China

Hip height: 29cm (11¹/₂in)

Found by: Qiang Ji, Shuan Ji, 1996

Weight: 6kg (13lbs)

Predators: *Dilong*

Prey: small animals

Lived: 125–122 million years ago, Early Cretaceous Period

Shonisaurus

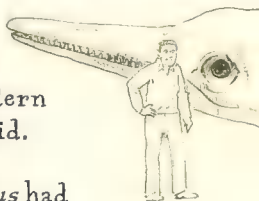
An enormous ichthyosaur
("fish lizard") that lived
at the same time as
the dinosaurs

Front
and back
flippers
same size

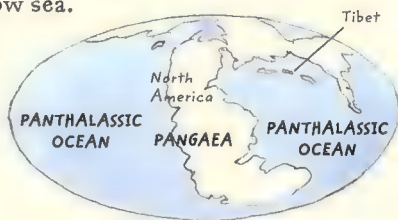
Long,
toothless
beak



- **Whale-lizard.** *Shonisaurus* was larger than today's sperm whale. It was not only the biggest ichthyosaur ever found, it was the biggest sea reptile ever, outsizing giants such as *Liopleurodon*.
- **Big eyes.** It had eyeballs as wide as car wheels, 60cm (2ft) across: twice the size of those of the modern record-breaker, the colossal squid.
- **Squid sucker.** Young *Shonisaurus* had teeth, and may have fed on fish, but adults were toothless, and used their long snouts to vacuum up squid-like creatures called belemnites.
- **Distant cousin.** *Himalayasaurus*, a close relative of North American *Shonisaurus*, was found in Tibet, near Mount Everest. In Triassic times, Tibet was an island in a shallow sea.



In the Triassic, all the continents were joined into one mass, Pangaea, and ichthyosaurs could swim around the single Panthalassic Ocean.



Pronounced: SHOW-nee-SORE-us

Length: 23m (75½ft)

Fossils: North America

Hip height: 3m (10ft)

Found by: miners, 1928

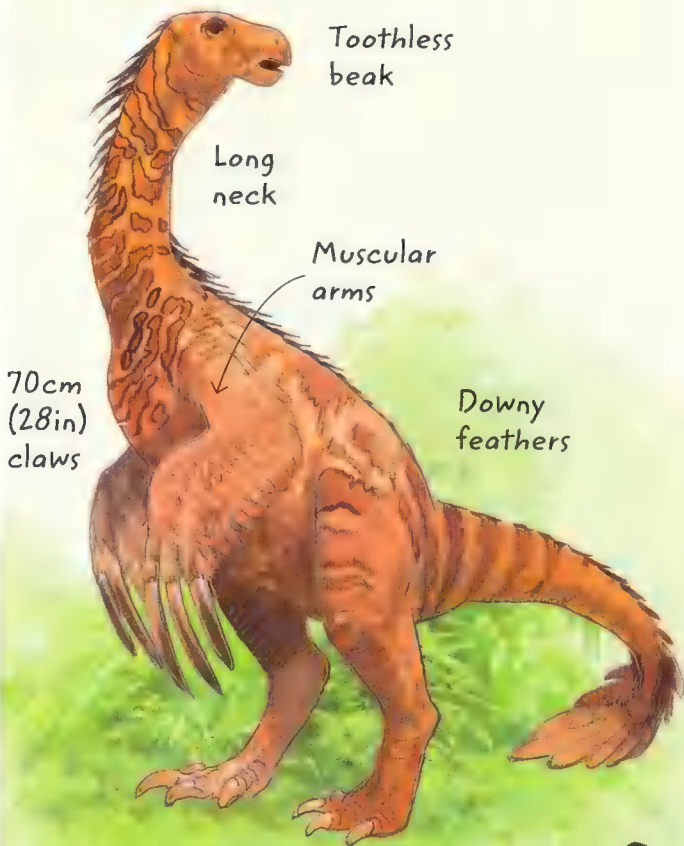
Weight: 27 tonnes (30 tons)

Predators: unknown

Prey: fish, belemnites

Lived: 223–203 million years ago, Late Triassic Period

Therizinosaurus





- **Reaping reptile.** *Therizinosaurus* had the biggest claws ever: longer than a baseball bat. Its name, which means 'reaping lizard', was given because its claws resemble a scythe – a curved knife used to cut crops.

- **Feathered giant.** *Therizinosaurus* was the largest feathered animal of all time. It was a theropod dinosaur related to, and taller than, *T. rex*. But, unusually, this theropod ate plants.
- **Sloth dinosaur.** It used its enormous claws to pull branches to its mouth, like an extinct mammal called a giant sloth. This earned it the nickname 'sloth dinosaur'.

- **Quick-draw claws.**
Therizinosaurus may also have used its claws to fend off attackers such as *Tarbosaurus*, the Asian version of *T. rex*.



Pronounced: THER-i-ZIN-o-SORE-us

Fossils: Mongolia

Found by: Evgeny Maleev, 1918

Predators: *Tarbosaurus*

Lived: 76–65 million years ago, Late Cretaceous Period

Length: 10m (33ft)

Hip height: 3.8m (12½ft)

Weight: 6 tonnes (6.6 tons)

Food: leaves, fruit

Styracosaurus

Frill with 4–6
long horns

Cheek
horns

Tough, parrot-
like beak



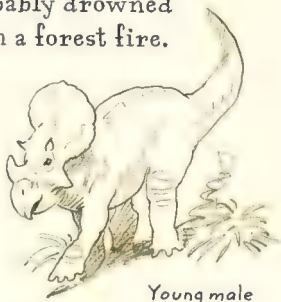


■ **A head full of horns.**

This smaller relative of *Triceratops* had long horns on its bony frill, as well as horns on its nose and cheeks. Its name, appropriately, means 'spiked lizard'.

- **Herd animals.** Many *Styracosaurus* fossils, some charred, were found together in a 'bone-bed'. A herd of these animals probably drowned in a river while fleeing from a forest fire.

- **Little big horn.** Its young had only nose, cheek, and brow horns, like *Triceratops*. The brow horns shrank with age, while the frill horns grew.



- **Rhino-dino.** *Styracosaurus* was built like a rhinoceros, and may have used its nose horn in a similar way, charging at rivals or enemies to fend them off.

Pronounced: sty-RACK-uh-SORE-us

Length: 5.5m (18ft)

Fossils: North America

Hip height: 1.65m (5½ft)

Found by: Lawrence Lambe, 1913

Weight: 2.5 tonnes (2.8 tons)

Predators: *Albertosaurus*

Food: ferns, cycads

Lived: 76–74 million years ago, Late Cretaceous Period

Stegosaurus

Bony plates in
staggered rows
along length
of body

Four
spikes
on tail



Front legs shorter
than back legs



- **Identification plates.** The bony plates on this animal's back probably helped it tell its own kind apart from other stegosaur species, which had plates in varying sizes, numbers and arrangements.



- **Thagomizer.** The spiky tail of *Stegosaurus* is known as a thagomizer. It used it to take swishing side-swipes at predators such as *Allosaurus*.

- **Tiled turtle.** *Stegosaurus* was discovered in 1877 by US fossil collector Othniel Marsh. He gave it its name, meaning 'covered reptile', because at first he thought it was a giant sea turtle, with the large plates tiling its back like a roof.

- **Leafy teeth.** *Stegosaurus* had leaf-shaped teeth, ideal for eating leaves.

- **Tiny brain.** *Stegosaurus* was bigger than an elephant, but its brain was only the size of a lime.



Stegosaurus tooth

Pronounced: STEG-uh-SORE-us

Length: 9m (30ft)

Fossils: USA, Portugal

Hip height: 2.75m (9ft)

Found by: Othniel C. Marsh, 1877

Weight: 1.8 tonnes (2 tons)

Predators: *Allosaurus*

Food: leaves

Lived: 156–151 million years ago, Late Jurassic Period

Tyrannosaurus

Huge head
and jaws

Enormous
teeth

Tiny arms
with two-
clawed hands

Powerful legs



- **Tyrant king.** Its full name, *Tyrannosaurus rex*, means 'king of the tyrant lizards'. It was tall enough to peer into the top window of a double-decker bus, and was one of the biggest carnivores that ever lived.

- **Mega bite.** *T. rex* had an awesome bite, three times as powerful as a lion's. With its huge jaws and banana-sized teeth it could crush skulls or splinter bones in a single chomp.



T. rex skull

- **Not so armless.** Its arms look puny on its huge body, but they were extremely strong, and could pin its struggling victims in place while it ate them alive.



Young
T. rex

- **Fluffy young.** Joint tissue discovered in a *T. rex* bone was found to be nearly identical to a chicken's, showing that *T. rex* was closely related to birds. Its young may have had chick-like fluff to keep them warm.

Pronounced: ti-RAN-oh-SORE-us

Length: 12m (40ft)

Fossils: North America

Hip height: 5.5m (18ft)

Found by: Barnum Brown, 1902

Weight: 6 tonnes (6.6 tons)

Predators: none

Prey: ceratopsians, hadrosaurs

Lived: 67–65 million years ago, Late Cretaceous Period

Troodon

Toothed
beak

Long
feathers
on arms
and tail

Long legs

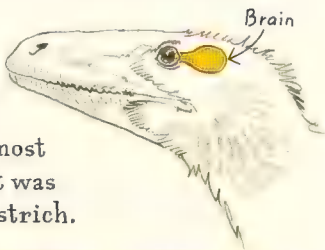
Raised
sickle
claws





- **Eagle-eyed.** These bird-like dinosaurs had large eyes that faced forward. This 'binocular' vision allowed these skilled predators to judge the distance of their prey accurately.

- **Bird or reptile?** If you saw a live *Troodon*, you'd probably think "strange bird" and not "that's a reptile". Feathery dinosaurs like *Troodon* are strong evidence that birds are a type of dinosaur.
- **Offset ears.** Like owls, *Troodon* had earholes at different heights. Having ears offset lets owls pinpoint prey at night by hearing alone, and it may have helped *Troodon* locate its prey in the bushes.
- **Dinosaur genius?** By comparing the size of its brain to its body, *Troodon* is judged to have been the most intelligent dinosaur. But it was only about as smart as an ostrich.



Pronounced: TROH-uh-don

Fossils: North America

Found by: Ferdinand Hayden, 1855

Predators: *Tyrannosaurus*

Lived: 80–65 million years ago, Late Cretaceous Period

Length: 2.4m (8ft)

Hip height: 1m (3¹/₄ft)

Weight: 70kg (150lbs)

Prey: small animals

Triceratops

Short
tail

Large frill

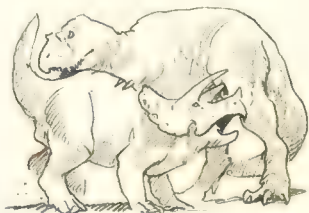
Small horns
on cheeks



- **Three horns.** *Triceratops* means 'three-horned face'. The name refers to the long horns on its nose and brows.

- **Fierce clashes.**

Evidence from damage on *Triceratops* skulls shows how they locked horns and engaged each other in combat, perhaps in fights over females or territory.



- **Arch-enemies.** Elephant-sized *Triceratops* was the largest of the ceratopsids (dinosaurs with horns). It was hunted by the most famous killer dinosaur ever, *Tyrannosaurus rex*.

- **The bitter end.** *Triceratops* lived at the very end of the age of the dinosaurs, right up to when they died out 65 million years ago.

Pronounced: try-SERA-tops

Length: 11m (36ft)

Fossils: North America

Hip height: 2m (7ft)

Found by: John Bell Hatcher, 1888

Weight: 5.4 tonnes (6 tons)

Predators: *Tyrannosaurus*

Food: shrubs, ferns

Lived: 67–65 million years ago, Late Cretaceous Period

Utahraptor

This fearsome, bird-like predator was the largest 'raptor' dinosaur.





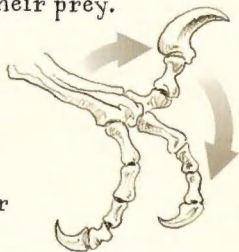
Velociraptor was the size of a turkey, *Deinonychus*, a leopard, and *Utahraptor*, a bear.

- **Double-sized dinosaurs.** The makers of the movie 'Jurassic Park' doubled their *Velociraptor*'s size to match a close relative, *Deinonychus*.

During filming, another 'raptor' dinosaur was found that was twice as large again:
Utahraptor.

- **Speedosaur.** Raptor dinosaurs, officially called dromaeosaurs ('running lizards'), were fast, agile hunters. Their long, stiff tails let them balance and spin quickly as they chased their prey.

- **Killer claw.** Dromaeosaurs had curved 'sickle' claws that were raised to keep them sharp. They used them to slash the sides of their prey, or pierce their windpipe, as big cats do today.



- **Utah thief.** *Utahraptor* means 'Utah's thief'. It was named after the US state where it was discovered.

Pronounced: YOU-ta-RAP-ter

Length: 7m (23ft)

Fossils: USA

Hip height: 1.7m (6ft)

Found by: James Kirkland, 1991

Weight: 450kg (1,000lbs)

Predators: none

Prey: *Cedarosaurus*, *Gastonia*

Lived: 128–124 million years ago, Early Cretaceous Period

Velociraptor



- **Grappling hooks.** Unlike its larger relatives, such as *Utahraptor*, *Velociraptor*'s sickle claws weren't strong enough for slashing, but may have let it climb onto the back of its prey to bite it.

- **Death struggle.** One of the most amazing fossils ever shows a *Velociraptor* locked in deadly combat with a *Protoceratops*. It was found in Mongolia in 1971.



The 'Fighting Dinosaurs' probably suffocated instantly when a sand dune collapsed beneath them.

- **Feather evidence.** When the 1993 movie 'Jurassic Park' made *Velociraptor* famous, no one knew that it had feathers. This was proven in 2007 when an arm bone was found with quill knobs showing where the feathers attached.
- **Robber on the run.** *Velociraptor* means 'swift thief'. It was named because of its speed, estimated at 40kph (25mph), and its grasping claws.

Pronounced: ve-LOSS-ih-rap-ter

Length: 1.5m (5ft)

Fossils: Mongolia

Hip height: 1m (3¹/₄ft)

Found by: Henry F. Osborn, 1924

Weight: 15kg (33lbs)

Predators: *Tarbosaurus*

Prey: *Protoceratops*

Lived: 86–70 million years ago, Late Cretaceous Period